REMARKS

This application has been reviewed in light of the final Office Action dated December 16, 2003. In view of the foregoing amendments and the following remarks, favorable reconsideration and withdrawal of the rejections set forth in the Office Action are respectfully requested.

Claims 73-85 are pending. Claims 24-28 and 61-72, which were directed to a non-elected invention, have been cancelled herein without prejudice or disclaimer of subject matter. (Claims 1-23 and 29-60 were cancelled previously.) Claims 73, 83 and 84 have been amended. Support for the claim changes can be found in the original disclosure, and therefore no new matter has been added. Claims 73, 83 and 84 are in independent form.

The Office Action set forth a restriction requirement between two groups of claim, stating that Group I (Claims 73-83) is drawn to "a method of manufacturing a piezoelectric element structure having first and second layers," classified in class 29, subclass 830, and Group II (Claims 84 and 85) is drawn to "a method of manufacturing a piezoelectric element structure having only one, single layer," classified in class 29, subclass 25.35. The Examiner contends that the inventions of Groups I and II are related as subcombinations disclosed as usable together in a single combination, and are distinct from each other because the invention of Group II has a separate utility from that of Group I. The Examiner contends that restriction is proper because the inventions are distinct and the search required for Group II is not required for Group I.

Since the Group I claims had already been presented and examined, they were deemed to have been constructively elected, and the Group II claims (Claims 84 and 85) were withdrawn from consideration as being directed to a non-elected invention.

Applicants respectfully traverse the restriction requirement.

Applicants submit that the two groups of claims are closely related and that a proper search of any of the claims of one group would likely include a search of the claims of the other group. In this regard, Applicants understand that the Office Action mischaracterizes the invention of Group II. Group II is not drawn to "a method of manufacturing a piezoelectric element structure having only one, single layer." That is, while the Claims of Group II recite "a layer having a perovskite structure," they are not limited to "only one, single layer" but could cover the formation of additional layers, such as are recited in the claims of Group I.

Since the Group I claims recite "a first layer having a perovskite structure" and the Group II claims recite "a layer having a perovskite structure," Applicants understand that the search required for Group II would indeed be required for Group I.

To be sure, the Group I claims include features not included in the Group II claims, such that it could nominally be alleged that the search required for Group I is not required for Group II. However, since the Group I claims recite "a second layer having a perovskite structure," it would seem that in fact a proper search for Group II would encompass the necessary search for Group I.

Thus, it is submitted that all of the claims could be searched simultaneously and that a duplicative search with possibly inconsistent results may occur if the restriction requirement is maintained.

Applicants further submit that any nominal burden placed upon the Examiner to search an additional subclass or two, necessary to determine the art relevant to Applicants' overall invention, is significantly outweighed by the public interest in not having to obtain and study several separate patents in order to have available all of the issued patent claims covering Applicants' invention. The alternative is to proceed with the filing of multiple applications, each consisting of generally the same disclosure, and each being subjected to essentially the same search, perhaps by different Examiners on different occasions. This places an unnecessary burden on both the Patent and Trademark Office and on Applicants.

In the interest of economy, therefore, for the Office, for the public-at-large and for Applicants, reconsideration and withdrawal of the restriction requirement are respectfully requested.

Claims 73, 74, 79-81 and 83 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,500,988 (*Moynihan et al.*).

Claims 75-78 and 82 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Moynihan et al.* in view of European Patent Publication EP 0 930 165 (*EP '165*).

In response to these rejections, Applicants submit the following remarks.

Independent Claim 73 recites, *inter alia*, a step of forming by a vapor method on a supporting substrate, in this order, a first layer having a perovskite structure and a second

layer having a perovskite structure and zirconium, a temperature at a time of formation of the first and second layers being at least 500°C during the vapor method, and the first layer being formed so as to contain no zirconium or an amount of zirconium less than an amount of zirconium contained in the second layer. Independent Claims 83 and 84 each recite a step including at least some similar or identical features.

Moynihan et al. relates to a method of making a perovskite thin-film ink jet transducer. According to *Moynihan et al.*, "a perovskite thin-film piezoelectric transducer 18 is formed on an electroded substrate 10 having a pattern of electrodes 17 by successive deposition of a series of layers 3 of PZT material, each containing a substantially uniform dispersion of perovskite PZT seed particles 4" (col. 3, lines 17-21). Each PZT layer is successively applied to the electroded substrate by [a] sol gel process" (col. 3, lines 22-23).

As shown, e.g., in Fig. 1 of *Moynihan et al.*, electrodes 17 are formed on substrate 10 before the PZT film 18 is applied, and electrodes 24 are formed on the upper side of the PZT film 18 after the PZT film 18 is applied (see, e.g., col. 4, lines 46-48 and 56-59).

After the PZT layer is deposited, it is annealed by heating from 600° to 800° C (col. 3, lines 29-30).

Applicants submit that nothing in *Moynihan et al.* would teach or suggest a step of forming by a vapor method on a supporting substrate, in this order, a first layer having a perovskite structure and a second layer having a perovskite structure and zirconium, a temperature at a time of formation of the first and second layers being at least 500°C during the vapor method, and the first layer being formed so as to contain no zirconium or an amount of zirconium less than an amount of zirconium contained in the second layer.

In this regard, the Examiner stated in the Office Action (page 6) that he deemed the limitation of "a temperature at a time of formation" as this relates to the formation of the first and second layers, not to exclude the number of steps needed to reach the temperature of at least 500° C to achieve crystallization growth, and that he deemed the "forming" steps of Claims 73 and 83 to be "fully satisfied by the depositing and annealing steps of Moynihan et al. regarding the claimed first and second layer."

However, Applicants understand that nothing in *Moynihan et al.* would teach or suggest at least that a layer having a perovskite structure is formed by a vapor method, or that a temperature at a time of formation of such layer is at least 500°C during the vapor method.

Further in this regard, the Examiner (page 3) cites *Moynihan et al.*'s electrodes 17 as corresponding to Applicants' claimed first layer having a perovskite structure. However, according to *Moynihan et al.*, the electrodes 17 are formed from "layer 12 of conductive material," which may be an "aluminum, nickel, chromium or platinum layer or an indium tin oxide (ITO) layer" (col. 4, lines 31-37). Such a composition does not have a perovskite structure. Nothing in *Moynihan et al.* is understood to suggest that electrodes 17 have a perovskite structure.

According to *Moynihan et al.*, the thin-film piezoeleectric transducer 18 is formed by PZT layers having electrodes on one or both sides of the PZT layers. As noted above, the PZT layers each contain a substantially uniform dispersion of perovskite PZT seed particles.

Accordingly, nothing in *Moynihan et al.* is understood to teach or suggest at least a first layer having a perovskite structure and a second layer having a perovskite structure and

zirconium, the first layer being formed so as to contain no zirconium or an amount of zirconium less than an amount of zirconium contained in the second layer.

Since *Moynihan et al.* does not contain all of the features in independent Claims 73, 83 or 84, those claims are believed allowable over this reference.

According to Applicants' understanding, *EP '165* relates to an ink jet head including a piezoelectric film comprising a first layer and a second layer each having a perovskite structure. However, *EP '165*, whether taken singly or in combination with *Moynihan et al.* (even assuming, for the sake of argument, that such combination were permissible), is not seen to remedy the deficiencies of *Moynihan et al.* discussed above. Accordingly, Claims 73, 83 and 84 are believed allowable over the cited art.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims presented for examination are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for at least the same reasons. Since each of these dependent claims is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

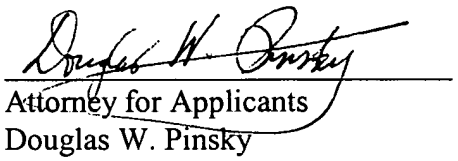
Applicants submit that this Amendment After Final Rejection clearly places the subject application in condition for allowance. This Amendment was not presented earlier, because Applicants believed that the prior Amendment placed the subject application in

condition for allowance. Accordingly, entry of the instant Amendment, as an earnest attempt to advance prosecution and reduce the number of issues, is requested under 37 C.F.R. § 1.116.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our Washington, D.C. Office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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